Application No. 10/762,983 Inventor(s): Abraham E. Karem Title: FAIL-OPERATIONAL INTERNAL COMBUSTION ENGINE Sheet 1 of 3 2004 PANEMAN -22b -26b -246 **20**b CHANGE AIR BYPASS (OPT) THROTTLE BODY(S) (OPT) VARIABLE INTAKE MANIFOLD (OPT) AIR FILTER(S)
COMPRESSOR
TURBINE
INTERCOOLER
TURBO OIL LINES
AIR DUCTING & MANIFOLD RIGHT AIR HANDLING SYSTEM FUEL FILTER(S) PRESSURE REGULATORS(S) RIGHT EXHAUST SYSTEM VALVES SPRINGS CAMSHAFT(S) CAMSHAFT DRIVE(S) LIFTERS RIGHT VALVE TRAIN RIGHT FUEL SYSTEM FUEL PUMP(S) FUEL RAIL(S) FUEL INJECTORS FUEL LINES ROCKERS (OPT) PUSHRODS (OPT) MUFFLER (OPT) EGR* (OPT) MANIFOLD WASTEGATE FADEC
PRESSURE SENSORS
TEMPERATURE SENSORS
CRANK/CAMSHAFT POSITION SENSORS(S)
ACTUATORS COLD START (OPT)
COMBUSTION PRESSURE (OPT)
FLOW METERS (OPT)
ACCELEROMETERS (OPT)
CURRENT/VOLTAGE SENSORS (OPT)
EXHAUST GAS COMPOSITION (OPT)
TELEMETRY (OPT) 306 RIGHT COOLING SYSTEM RADIATOR(S)
PUMP(S)
THERMOSTAT
OIL COOLLER
FAN(S)
DUCTING
PLUMBING RIGHT COMPUTER(S) SENSORS, AND CONTROLS RIGHT CYLINDER BANK -32b CAPACITOR(S) WIRE(S) SPARK PLUG(S) RIGHT IGNITION SYSTEM (OPT) 40 186 CRANKSHAFT LUBRICATION SYSTEM (PUMP, JETS, PLUMBING, FILTER) STARTING SYSTEM CENTRAL COMPUTER (OPT) -35 PISTONS CONNECTING RODS COMMON MODULE CRANKCASE FIG.300 FADEC
PRESSURE SENSORS
TEMPERATURE SENSORS
CRANK/CAMSHAFT POSITION SENSORS(S)
ACTUATORS COIL(S)
CAPACITOR(S)
WIRE(S)
SPARK PLUG(S) COLD START (OPT)
COMBUSTION PRESSURE (OPT)
FLOW METERS (OPT)
ACCELEROMETERS (OPT)
CURRENT/VOLTAGE SENSORS (OPT)
EXHAUST GAS COMPOSITION (OPT)
TELEMETRY (OPT) LEFT IGNITION SYSTEM (OPT) LEFT COMPUTER(S) SENSORS, AND CONTROLS 180 LEFT |CYLINDER| BANK RADIATOR(S)
PUMP(S)
THERMOSTAT
OIL COOLLER
FAN(S)
DUCTING
PLUMBING LEFT COOLING SYSTEM 220 240 (OPT) *EXHAUST GAS RECIRCULATION FUEL FILTER(S) PRESSURE REGULATORS(S) LEFT AIR HANDLING SYSTEM INTERCOOLER TURBO OIL LINES AIR DUCTING & MANIFOLD CHANGE AIR BYPASS (OPT) THROTILE BODY(S) (OPT) VARIABLE INTAKE MANIFOLD (O -260 LEFT EXHAUST SYSTEM VALVES SPRINGS CAMSHAFT(S) CAMSHAFT DRIVE(S) LEFT FUEL SYSTEM FUEL PUMP(S) FUEL RAIL(S) FUEL INJECTORS LEFT VALVE TRAIN ROCKERS (OPT) PUSHRODS (OPT) AIR FILTER(S) COMPRESSOR TURBINE MUFFLER (OPT) EGR* (OPT) FUEL LINES MANIFOLD WASTEGATE LIFTERS

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